

Claims

1. An inorganic radiation protection mixture comprising
 - a) at least 26 wt.% of gadolinium as the element and/or from
5 compounds and/or from alloys,
 - b) at least 10 wt.% of one or more elements and/or alloys and/or
compounds of these elements chosen, independently of each other,
from the group consisting of barium, indium, tin, molybdenum,
niobium, tantalum, zirconium and tungsten, wherein the
10 concentration of tungsten, if tungsten is present, is at least 10 wt.%
with respect to the total amount of mixture.
2. The mixture according to Claim 1, further comprising component c) 0 to
64 wt.% one or more elements and/or alloys and/or compounds of these
15 elements chosen, independently of each other, from the group consisting of
bismuth, lanthanum, cerium, praseodymium, neodymium, promethium,
samarium, europium, terbium, dysprosium, holmium, erbium, thulium,
ytterbium and lutetium .
- 20 3. The mixture according to Claim 1, wherein a maximum of 50 wt.% of tin,
with respect to the total amount of mixture, is present.
4. The mixture according to Claim 1, wherein the elements and/or alloys
and/or compounds in component b) have a complementary radiation
25 attenuating characteristic in the range 10 to 600 keV.
5. The mixture according to Claim 1 comprising at least 35 wt.% of
gadolinium and at least 20 wt.% of tungsten.
- 30 6. The mixture according to Claim 1, wherein the specific density of the

inorganic radiation protection mixture is in the range 4.0 to 13.0 g/cm³.

7. The mixture according to Claim 1, wherein the inorganic radiation protection mixture has particles with an average particle diameter in the range 0.1 to 200 µm.
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8. The mixture according to Claim 2, wherein components b) and c) are used in the form of alloys and/or compounds chosen, independently of each other, from the group consisting of oxides, carbonates, sulfates, halides, hydroxide, tungstates, carbides and sulfides.
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9. Process for preparing the mixture according to Claim 1, comprising the steps of drying components a, b and c in a temperature range of 20 to 500°C, screening and mixing components a, b and c for 5 minutes to 24 hours.
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10. A radiation protection compound comprising a mixture according to Claim 1.
- 20 11. Polymeric radiation protection substances comprising mixtures according to Claim 1.
- 25 12. Polymeric radiation protection substance according to Claim 11, wherein the polymeric radiation substance further comprises additives.
13. Polymeric radiation protection according to Claim 11, wherein the polymer in the polymeric radiation protection is chosen from the group consisting of rubbers, thermoplastic materials and polyurethanes.
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14. Polymeric radiation protection according to Claim 11, wherein the degree of filling is less than 80 wt.%.
- 5 15. Polymeric radiation protection substance comprising
- α) 5 to 85 wt.% of rubber, thermoplastic material or polyurethane and
 - β) 10 to 80 wt.% of the mixture according to Claim 1 and
 - γ) 5 to 20 wt.% of other additives.
- 10 16. Process for preparing a polymeric radiation protection substance according comprising reacting a polymer with the mixture according to to Claim 1.
17. Process for preparing a polymeric radiation protection substance according to Claim 16, wherein the polymer is a rubber and wherein the rubber is
- 15 compounded with the mixture..
18. Process for preparing a polymeric radiation protection substance according to Claim 16, wherein the polymer is a thermoplastic material and wherein the polymer is mixed with the mixture.
- 20 19. Process for preparing a polymeric radiation protection substance according to Claim 16, wherein the polymer is polyurethane and the starting materials for the polyurethane are mixed directly with the mixture and then polymerized
- 25 20. A product comprising the polymeric radiation protection substance according to Claim 11.
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